A Preliminary Note on a Review of the Genus *Neurisothrips*, New Genus (Thysanoptera: Thripidae)[1]

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Studies of the type materials in various collections indicated that all the Hawaiian endemic species presently placed in the subgenus *Thrips* (*Isothrips*) Priesner 1940 which was separated from the genus *Isoneurothrips* Bagnall 1915 are not congeners there. A new genus, *Neurisothrips*, with *Thrips multispinus* Bagnall as its type, is to be erected for placing the above species. No species of *Neurisothrips* so far has been collected from any other Pacific islands. On the Hawaiian Islands, however, very rich speciation appears to be present. Seven species have been recorded so far, and others are to be named in a review presently planned.

Genus **Neurisothrips,** new genus

Type of the genus: *Thrips multispinus* Bagnall, 1910.

Head transverse, ocellar hump slightly elevated, front nearly straight and not sloped to base of antenna; interocellar and postocular (4th of postocular seta series) setae well developed; ante- and latero-ocellar setae present; 7-segmented antennae and 3-segmented maxillary palpi normal; long style of antenna, about as long as a half of VI. Prothorax with 2 long posterior angle setae and prominent median setae on posterior margin; pronotum weakly striated. Meso- and meta-nota strongly striated, metepimeron always weakly striated; median setae on mesonotum near posterior margin, median setae on metanotum on anterior margin; mesospinula prominent, but no spinula on metasternum. Foreleg unarmed. Forewing with regularly spaced seta rows on fore and hind veins. Many disc setae (always more than 2) on side areas of terga, but no disc seta on epipleura; dorsal setae on tergum IX fully developed; combs on tergum VIII always fully developed. Male: Two pairs of prominent setae on dorsum of tergum IX, (Bl and dorsal setae near and cephalo-laterad from Bl), accessory marginal setae weak and move close to B2.

Neurisothrips is not a subgenus of *Thrips*. *Thrips* (*Isothrips*) is readily separated from *Neurisothrips* by a long 5th seta instead of 4th, of the postocular seta series and absence of ante-ocellar setae, by median setae on meso- and metanota placed far away from the margins, by strongly reticulated metepimeron, by only 2 disc setae on the side areas of terga, and by absence of or

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extremely weak combs on tergum VIII. Another significant difference on tergum IX of the male is undeveloped dorsal setae, but 2 pairs of long setae mesad (Bl and accessory marginal setae near and caudo-laterad from Bl). The chaetotaxy on the male tergum IX is constant among all the species of *Thrips* (*Isothrips*), as well as *Neurisothrips*.

Isoneurothrips is also readily separated from *Neurisothrips* by undeveloped head setae and the absence of ante-ocellar setae, by cylindrical antennal segments, by short and numerous wing setae, by 2 disc setae on the side areas of terga, and many disc setae on the epipleura, and by 3 pairs of prominent setae on the dorsum of male tergum IX (Bl, accessory marginal setae, and dorsal setae).

Variations in number and position of disc setae on the side areas of terga are useful for separating the different species, whereas striation patterns on meso- and meta-nota and also metepimeron vary little and are rather useless for the same purpose. The following key will be useful for recognizing the 7 known species:

KEY TO THE SPECIES OF NEURISOTHRIPS

1. Lateral disc setae on tergum IV in a single row; yellow species with very short antennae of grey III to VII, short head with long mouth cone, yellow wing with a single pale greyish band at the second quarter. (Oahu, Molokai, Hawaii) .....6. *carteri* (Moulton)
   Lateral disc setae on tergum IV, in double or triple rows 2
2. Yellow species with yellow wing 3
   Dark brown to chestnut brown species 4
3. Antenna about 2 times as long as head, greyish brown V to VII, body setae yellow. (Oahu, Hawaii) .....3. *dubautiae* (Moulton)
   Antenna about 2.5 times as long as head, greyish brown IV to VII, body setae dark brown. (Kauai, Oahu, Hawaii).....
   .....5. *williamsi* (Moulton)
4. Two brown cross bands on wing at middle and tip, scale brown at basal 1/3. (Oahu) .....7. *fasciatus* (Moulton)
   Uniformly brown wing or with a slightly pale area near base 5
5. Antenna about 2.7 times as long as head. (Kauai, Oahu, Molokai, Lanai, Maui, Hawaii).....2. *antennatus* (Moulton)
   Antenna about 2.4 times as long as head 6
6. Narrow head with laterally bulged eyes, occiput below eye long (43 μ), mouth cone long (220 μ); antenna III and V nearly subequal in length (45:34 μ); thick Bl (40 μ) twice as long as B3 on anterior margin of prothorax, median setae of mesonotum on posterior margin; Bl of male tergum IX on posterior margin, tympana on sterna in small circle or ellipse. (Kauai, Oahu, Molokai, Hawaii)
   .....4. *fullawayi* (Moulton)
   Broad head with unbulged eyes, occiput below eye short (36 μ), mouth cone short (185 μ); antenna III decidedly longer than V (50:30 μ);

thin Bl (25 μ) subequal to B3 on anterior margin of prothorax; median setae on mesonotum moved cephalad to B2 level; Bl of male tergum far set back from posterior margin, tympana on sterna in transverse narrow rod. (Kauai, Oahu, Hawaii) ...1. *multispinus* (Bagnall)

1. **Neurisothrips multispinus** (Bagnall), new combination

Thrips multispinus Bagnall, 1910: 699. figs.—*Isoneurothrips multispinus:* Moulton, 1928: 116.—*Thrips (Isothrips) multispinus:* Priesner, 1940: 54.—*Thrips (Isoneurothrips) multispinus:* Zimmerman, 1948: 428.

The type series consisted of 5 different lots collected by Perkins—2 from Kilauea, Hawaii; one from Kauai; and 2 from Molokai. Presently, one from Kauai and one from Molokai are missing; but 2 ♀♀ 2 ♂♂ (3 ♀♀ 1 ♂ as Bagnall stated are in error) from Kilauea (Perkins No. 575) including 1 ♀ 1 ♂ on a slide which was labelled by Bagnall as "Type", and 2 ♀♀ from Kalae (Kalal as spelled by Bagnall in error), Molokai (Perkins No. 172) on a slide labelled by him as "Cotype" are present in the British Museum. Another 1 ♀ from Kilauea (Perkins No. 686) also labelled by him as "Cotype" is now in the USNM collection.

The type series was found heterogeneous. Bagnall's description and figures were apparently based on Perkins No. 575 and 686 from Kilauea, and he apparently failed to recognize the differences in Perkins No. 172 from Molokai. The Molokai specimens were found to be identical with Moulton's *fullawayi*. The lectotype of *multispinus*, therefore, should be the one Bagnall labelled "Type," and the type locality should be Kilauea, Hawaii.

Fullawayi is a valid species, and closely related with *multispinus*, but readily separable as shown in the key.

The following measurements (all in μ) of *multispinus*, will be useful for recognizing the species:

♀(*non-type*): Body length 1160. Head 100 long, 138 wide (eye), 138 wide (cheek); eye 60 long, 38 wide, 62 interval; interocellar 58 long, postocular 50 long; antenna: 18(25, 21), 38(23), 50(18), 43(16), 30(17), 35(20), 18(9), 250 in total. Prothorax 113 long, 163 wide; posterior angle setae both 75 long, pterothorax 175 long mesally, 220 wide, lateral setae on mesonotum 40 long, median setae on metanotum 63 long. Wing 690 long, 50 wide at middle; 26 setae on costa, 20 on forevein, 15 on hind vein, 5 on scale; last setae on costa and both veins 50 to 65 long. Abdomen 780 long, 250 wide (on IV); on tergum IV, 2 lateral, 1 posterior angle, and 7 disc setae at side; terga IX and X, 70 and 60 long, respectively, terminal setae on IX 83 to 103 long, on X 85 long; combs on VIII complete, 14 pairs, 20 to 25 long; ovipositor 220 long.

♂(*non-type*): Body length 1020. Head 83 long, 133 wide (eye); antenna 240 long in total; prothorax 113 long, 163 wide; pterothorax 168 long (mesally), 210 wide; wing 680 long; abdomen 660 long; on tergum

IX, Bl 38 long, B2 88 long, dorsal setae 28 long, accessory marginal setae 13 long, near B2; clasper on sternum IX 78 long; genitalia 83 long, 50 wide; tympana about 45 wide, 6 long.

2. **Neurisothrips antennatus** (Moulton), new combination

Isoneurothrips antennatus Moulton, 1928:112.—*Thrips* (*Isothrips*) *antennatus:* Priesner, 1940: 54.—*Thrips* (*Isoneurothrips*) *antennatus:* Zimmerman, 1948: 425.

All the holotypes of *antennatus* and other Moulton's species are in the California Academy of Sciences collection.

Holotype of *antennatus* is male, and female is yet to be described. The following measurements of a female from the type locality and type host (Saki-1731) will be useful for recognizing the species:

♀(*non-type*): Color as male, foretibia and all tarsi lighter. Body length 1650 μ. Head 120 long, 170 wide (eye), 170 wide (cheek); eye 73 long, 45 wide, 80 interval, occiput 45 long below eye; interocellar setae 48 long, postocular setae 49 long; mouth cone 250 long. Antenna slender; 29(35, 30), 45(28), 69(21), 58(18), 48(18), 41(16), 24(9), total 325, intermediate segments narrow in dorsal aspect but strongly bulged ventrally. Prothorax 150 long, 220 wide; posterior angle setae 73 long inner, 84 long outer. Pterothorax 235 long mesally, 310 wide; median setae on metanotum 75 long. Wing 960 long, 55 wide at middle; 35 setae on costa, 23 on forevein, 19 on hind vein; all setae long. Abdomen 1050 long, 320 wide at IV; on tergum IV, 2 lateral, 1 posterior angle, and 9 to 10 disc setae at side; on IX, Bl 75 long, B2 and 3 120 long, dorsal setae 60 long; on X, Bl and 2 about 100 long; combs on VIII well developed; ovipositor 270 long.

3. **Neurisothrips dubautiae** (Moulton), new combination

Isoneurothrips dubautiae Moulton, 1928: 112.—*Thrips* (*Isothrips*) *dubautiae:* Priesner, 1940: 54.—*Thrips* (*Isoneurothrips*) *dubautiae:* Zimmerman, 1948: 428.

4. **Neurisothrips fullawayi** (Moulton), new combination

Isoneurothrips fullawayi Moulton, 1928: 114. fig.—*Thrips* (*Isothrips*) *fullawayi:* Priesner, 1940: 54.—*Thrips* (*Isoneurothrips*) *fullawayi:* Zimmerman, 1948: 428. figs.

A part of the type series of *multispinus* was found identical with this species.

5. **Neurisothrips williamsi** (Moulton), new combination

Isoneurothrips williamsi Moulton, 1928: 115.—*Thrips* (*Isothrips*) *williamsi:* Priesner, 1940: 54.—*Thrips* (*Isoneurothrips*) *williamsi:* Zimmerman, 1948: 429.

6. **Neurisothrips carteri** (Moulton), new combination

Isoneurothrips carteri Moulton, 1937: 411.—*Thrips* (*Isothrips*) *carteri:* Priesner, 1940: 54.—*Thrips* (*Isoneurothrips*) *carteri:* Zimmerman, 1948: 427.

7. **Neurisothrips fasciatus** (Moulton), new combination

Isoneurothrips fasciatus Moulton, 1937: 410.—*Thrips* (*Isothrips*) *fasciatus:* Priesner, 1940: 54.—*Thrips* (*Isoneurothrips*) *fasciatus:* Zimmerman, 1948: 428.

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